

**WATER MITES OF THE GENUS *ASPIDIOBATES* FROM VICTORIA,
AUSTRALIA, WITH THE DESCRIPTION OF TWO NEW SPECIES
(CHELICERATA: ACARINA: HYGROBATIDAE)**

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Abstract

Harvey, M.S. and Cook, D.R. 1988. Water mites of the genus *Aspidiobates* from Victoria, Australia, with the description of two new species (Chelicera: Acarina: Hygrobatidae). *Memoirs of the Museum of Victoria* 49: 51-57.

Five species of *Aspidiobates* Lundblad are recorded from Victoria, Australia: *A. bidewel* sp. nov., *A. aethes* sp. nov., *A. scutatus* Lundblad, *A. similis* Cook and *A. geometricus* Cook. A key to the Australian species of the genus is provided.

Introduction

Thirteen species of *Aspidiobates* Lundblad have been previously described, nine from New Caledonia (Viets, 1968), one from New Zealand (Hopkins, 1975, Cook, 1984) and three from Australia (Lundblad, 1941, Cook, 1986). Of the three described Australian species, only *A. scutatus* Lundblad has been recorded from Victoria (Cook, 1986). Recent field work has uncovered many additional specimens of five species of this genus, including representatives of two new species, specimens of which exhibit character states hitherto unrecorded in the genus. Thus, the opportunity is taken to describe these species, as well as provide new locality records for the three previously described Australian species.

Specimens are lodged in the Museum of Victoria, Melbourne (NMV), the Field Museum of Natural History, Chicago (FMNH) and the Canadian National Collection, Ottawa (CNC). Many specimens are mounted on microscope slides in glycerine jelly. The collection sites and station numbers of *A. aethes* are described by Malipatil and Blyth (1982) and Blyth et al. (1984), and unless otherwise stated, all material was collected by the Museum of Victoria's Biological Survey Department (now the Department of Environmental Records). Terminology follows Cook (1974), except for the terminology of the leg segments which follows Smith (1976). Measurements were taken to the nearest 5 µm and dimensions are usually given as length divided by width.

Hygrobatidae

***Aspidiobates* Lundblad**

Aspidiobates Lundblad, 1941: 115.—Cook, 1974: 224-225. (Type species *Aspidiobates scutatus* Lundblad, 1941, by original designation.)

Remarks. The diagnosis provided by Cook (1974) is adequate except for the following amendments: three or four pairs of genital acetabula; legs relatively unmodified, except for males of one species in which the genu of the fourth leg is modified, and without swimming hairs.

***Aspidiobates bidewel* sp. nov.**

Figures 1-13

Type material. Holotype male, Victoria, Bonang River, 4 km SSE of Bonang, D.R. Cook, M.S. Harvey and A.J. Boulton, 7 Apr 1985, NMV K354 (slide).

Paratypes: same data as holotype, NMV K355-367, 8 males, 5 females (slides and fluid); FMNH, 1 male, 1 female (slides); CNC 1 male, 1 female (slides).

Other material examined. Victoria, Yarra River at Maroondah Highway, collected by staff of Chisholm Institute, Oct 1980, NMV, 1 female (slide).

Diagnosis. Genu IV of male curved and with a ventral row of stout setae, the proximal ones spatulate.

Description. Dorsal and ventral shields present; dorsal shield of male (Fig. 1) entire, of female (Fig. 3) consisting of a large anterior plate and 2 pairs of narrow posterior platelets; male dorsal shield with first pair of glandularia slightly anterior to

Key to Australian species of *Aspidiobates*

- | | | |
|-------|---|-----------------------|
| 1. | Genital field with 4 pairs of acetabula | <i>A. aethes</i> |
| — | Genital field with 3 pairs of acetabula | 2 |
| 2(1). | Males | 3 |
| — | Females | 6 |
| 3(2). | Dorsal shield entire; genu IV proximally curved, ventral margin with a row of stout setae | <i>A. bidewel</i> |
| — | Dorsal shield divided into at least 3 platelets; genu IV not curved, without stout setae | 4 |
| 4(3). | Dorsal shield divided into 3 platelets | <i>A. geometricus</i> |
| — | Dorsal shield divided into 5 platelets | 5 |
| 5(4). | Distance separating first pair of glandularia greater than distance separating second pair of glandularia; anus midway between genital field and posterior edge of ventral shield | <i>A. scutatus</i> |
| — | Distance separating first pair of glandularia equal to distance between second pair of glandularia; anus close to genital field | <i>A. similis</i> |
| 6(2). | Dorsal shield divided into 6 platelets | <i>A. geometricus</i> |
| — | Dorsal shield divided into 5 platelets | 7 |
| 7(6). | Distance separating first pair of glandularia greater than distance separating second pair of glandularia | <i>A. scutatus</i> |
| — | Distance separating first pair of glandularia equal to distance separating second pair of glandularia | 8 |
| 8(7). | Dorsal shield approximately 850-960 μm in length | <i>A. similis</i> |
| — | Dorsal shield greater than 1100 μm in length | <i>A. bidewel</i> |

postocularia and closer to postocularia than to lateral margins of plate; third pair of glandularia same distance apart as second pair of glandularia; female dorsal plate with first pair of glandularia slightly posterior to postocularia and closer to lateral margin of shield than to postocularia; ventral shield (Figs. 2, 4) with suture lines between third and fourth coxae at a moderate angle; glandularia of fourth coxae shifted onto the third coxae but not approaching edge of third coxae; genital field with 3 pairs of acetabula (Figs. 5, 10), anterior pair slightly elongate (anterior pair absent in one female, and partially absent in another); anus on same level as posterior pair of ventroglandularia. Palp (Figs. 9, 11); genu of male with more dorsal setae than that of female. Legs (Figs. 6-8, 12-13); swimming setae absent; telofemur of male leg I thickened and with many thin setae; genu of male leg IV proximally curved, ventral margin with a row of stout setae, the proximal ones distally spatulate.

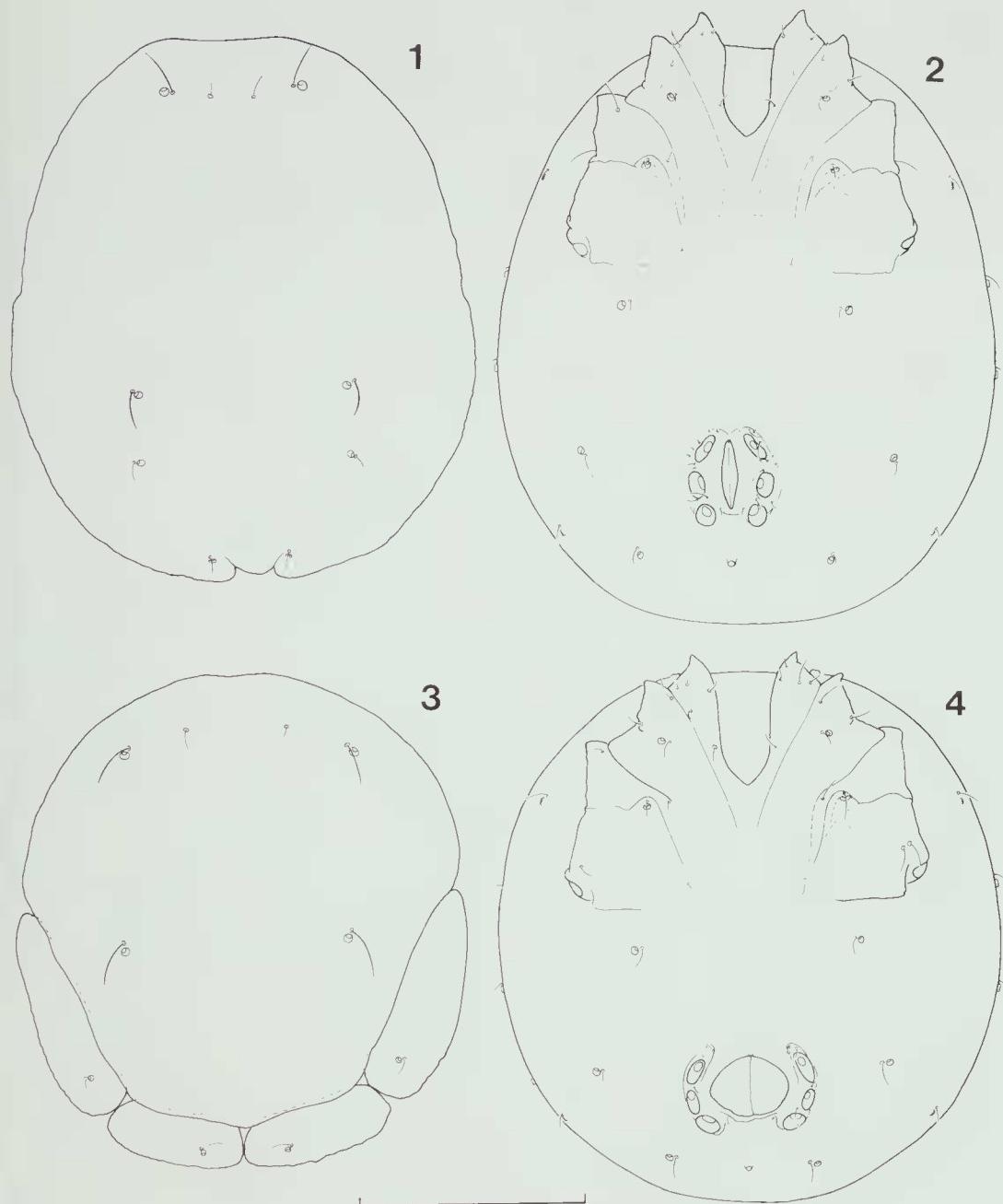
Dimensions (μm) male (female): Dorsal shield 1240-1305/ 1000-1095 (1175-1210/1000-1030), large dorsal plate length (1065-1160), anterior platelet length (510--540), posterior platelet length (320-360), ventral shield 1320-1415/1155-1260 (1230-1310/1160-1175); capitulum 255 (260-275); chelicera 410-455 (430-455); genital field 240-255/205-235 (215-230/305-335); palp: trochanter 35-40 (40), femur 160-185 (165-180), genu 120-140 (120-140), tibia

190-245 (220-240), tarsus 60-65 (60-65); leg I: trochanter 90-120 (85-100), basifemur 190-200 (150-180), telofemur 250-295 (220-255), genu 435-485 (340-375), tibia 395-435 (340-380), tarsus 300-320 (265-300); leg IV: trochanter 230-255 (180-195), basifemur 290-325 (250-280), telofemur 395-435 (345-410), genu 525-585 (510-570), tibia 555-620 (515-560), tarsus 395-450 (370-410).

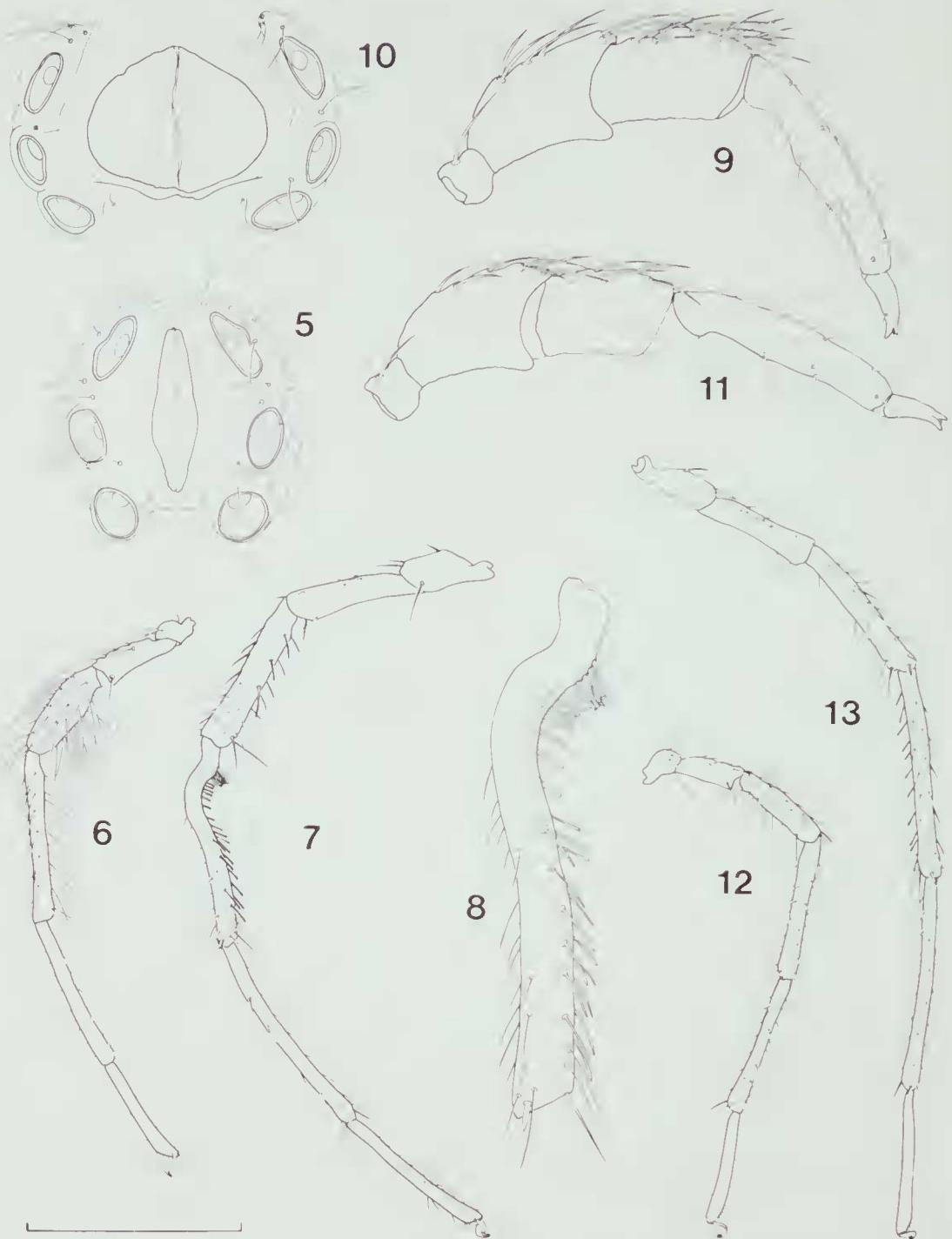
Etymology. The specific epithet is a noun in apposition taken from the name of the aboriginal tribe that originally inhabited the area of east Gippsland that includes the type locality (Tindale, 1940).

Remarks. *Aspidiobates bidewel* resembles *A. imamurai* K.O. Viets from New Caledonia in the type of sexual dimorphism of the dorsal shield, but males differ in the shape of the genu of leg IV and females by the relative sizes of the platelets of the dorsal shield. *Aspidiobates bidewel* is the largest known Australian species of the genus, but several species from New Caledonia are approximately the same size (Viets, 1968).

The female from the Yarra River is provisionally identified as this species, as it is slightly larger than the females from the type locality (its measurements have not been incorporated in the description). Males are needed to confirm the identification.



Figures 1-4. *Aspidiobates bidewel* sp. nov. Holotype male: fig. 1, dorsal shield; fig. 2, ventral shield. Paratype female, K363: fig. 3, dorsal shield; fig. 4, ventral shield. Scale line = 500 μ m.



Figures 5-13. *Aspidiobates bidewel* sp. nov. Holotype male: fig. 5, genital field; fig. 6, right leg I; fig. 7, right leg IV; fig. 8, right genu IV. Paratype male, K355: fig. 9, left palp. Paratype female, K363: fig. 10, genital field; fig. 11, left palp; fig. 12, left leg I; fig. 13, left leg IV. Scale line = 200 μm (Figs. 5, 8-11), 500 μm (Figs. 6-7, 12-13).

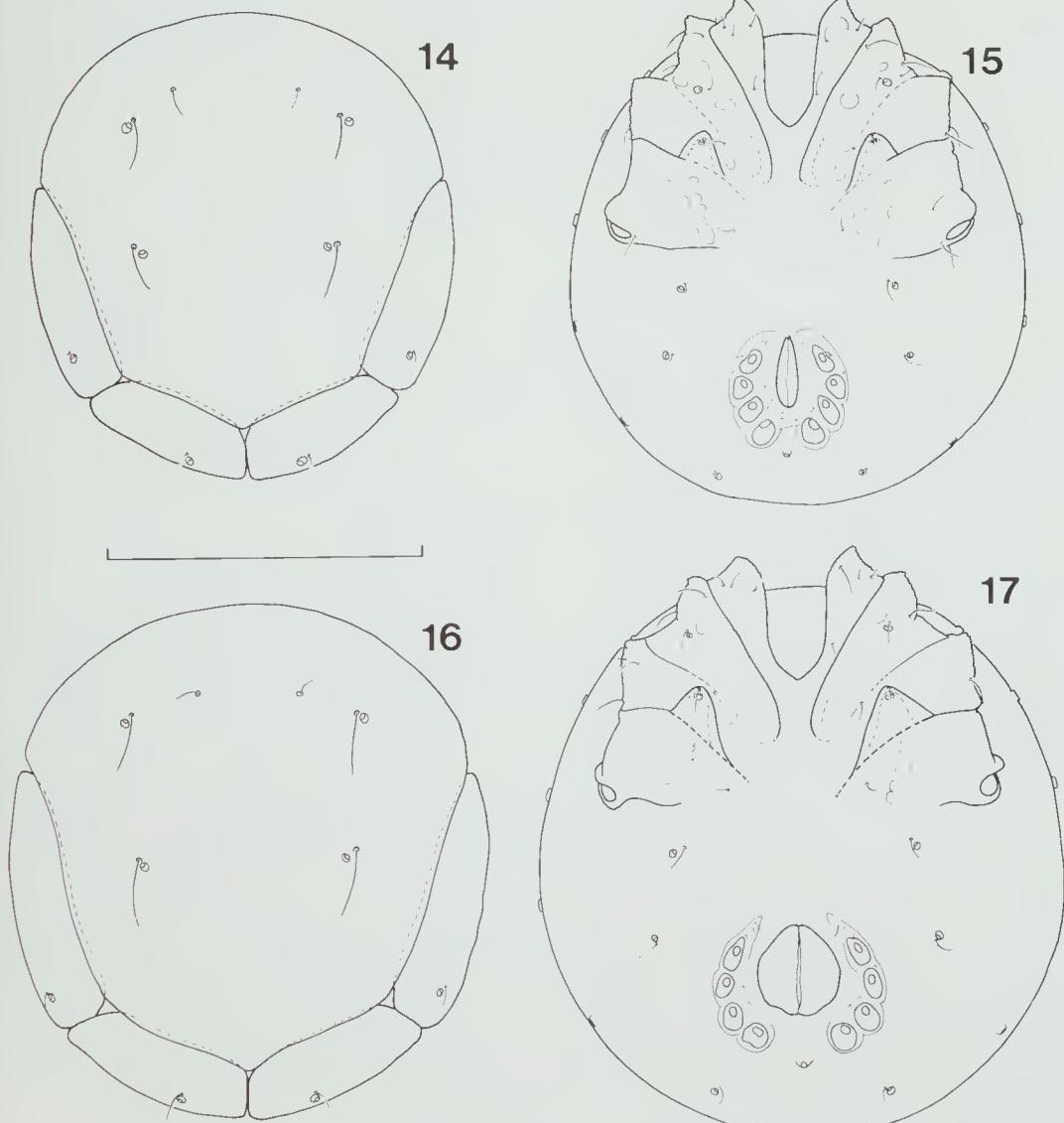
***Aspidiobates aethes* sp. nov.**

Figures 14-22

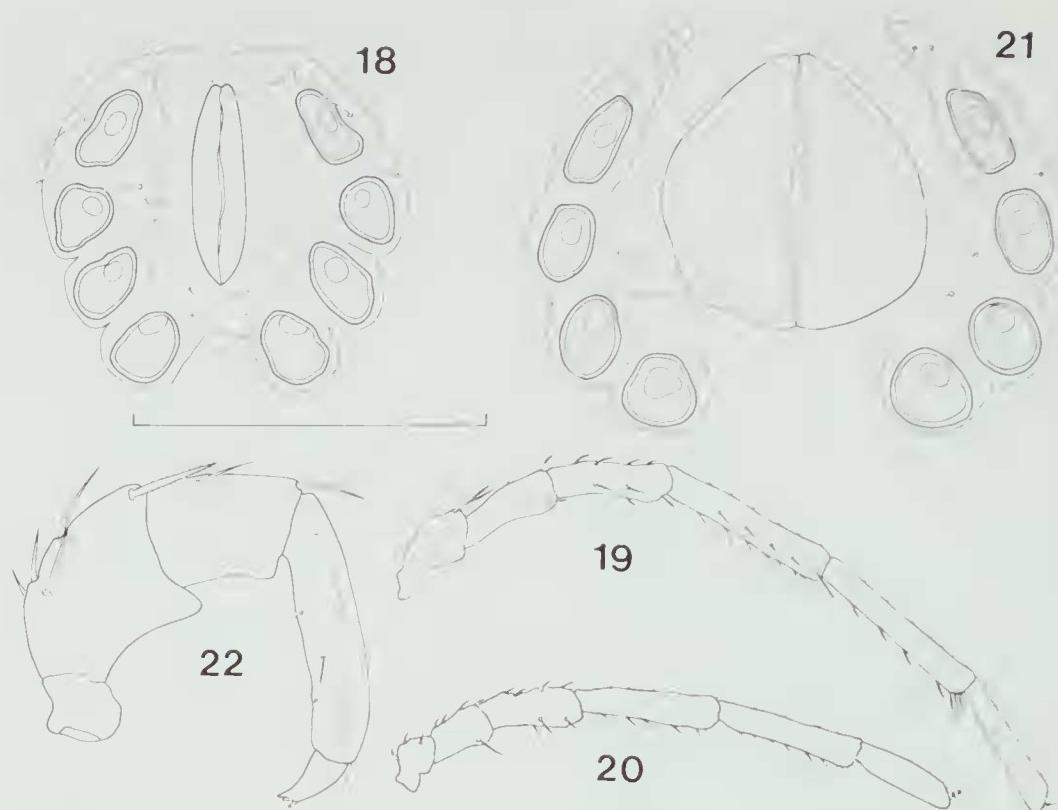
Type material. Holotype male, Victoria, Lyndon Flat, Barkly-Macalister junction (stn Mc14), 24 Feb 1978, NMV K372 (slide).

Paratypes: Victoria: same data as holotype, NMV K373-374, 2 males (slides). Caledonia River below junction of main branches (stn Mc6), 22 Feb 1978, NMV K375-378, 2 males, 2 females (fluid). Macalister-Caledonia River junction (stn Mc10), 24 Feb 1978, NMV K379-382, 1 male, 3 females (slides). Wellington River, 23.5 km NNE

of Licola on Tamborine Road (stn Mc19), 24 Feb 1978, CNC, 1 male, 1 female (slides). Thomson River, 7 km NNW of Walhalla (stn T16), 6 Mar 1981, NMV K383, 1 male (slide). Aberfeldy River on Aberfeldy-Walhalla Road (stn T19), 16 Aug 1977, FMNH, 1 male (slide). Thomson-Aberfeldy River confluence, Fingerboard Spur Track (stn T20), 4 May 1977, FMNH, 1 female (slide). Thomson River, Forestry Track C6 (stn T21A), 3 Mar 1981, NMV K384, 1 female (slide). Mitta Mitta River, 2 km W of Dartmouth Dam Wall, 7 Mar 1977, NMV K385, 1 female (slide).



Figures 14-17. *Aspidiobates aethes* sp. nov. Holotype male: fig. 14, dorsal shield; fig. 15, ventral shield. Paratype female, K380: fig. 16, dorsal shield; fig. 17, ventral shield. Scale line = 500 µm.



Figures 18-22. *Aspidiobates aethes* sp. nov. Holotype male: fig. 18, genital field; fig. 19, left leg IV; fig. 20, left leg I. Paratype female, K380: fig. 21, genital field. Paratype male, K379: fig. 22, left palp. Scale line = 200 μm (Figs. 18, 21-22), 500 μm (Figs. 19-20).

Diagnosis. Genital field with four pairs of acetabula.

Description. Dorsal and ventral shields present; dorsal shield (Figs. 14, 16) similar in both sexes, with 2 pairs of narrow posteriorly placed platelets; large dorsal plate with 2 pairs of glandularia and the postocularia; postocularia and the first pair of glandularia placed relatively close to each other; ventral shield (Figs. 15, 17) with suture lines between third and fourth coxae extending anterolaterally at a moderate angle; glands of fourth coxae shifted onto the third coxae near the anterior suture lines of the third coxae; genital field with 4 pairs of acetabula (Figs. 18, 21), anterior pair slightly elongate; anus slightly posterior to genital field. Palp (Fig. 22): not sexually dimorphic. Legs (Figs. 19-20): swimming setae absent; not sexually dimorphic.

Dimensions (μm) male (female): Dorsal shield 715-795/680-730 (780-890/760-830), large dorsal

plate length 635-700 (700-800), anterior platelet length 350-405 (385-465), posterior platelet length 260-295 (300-350), ventral shield 790-885/720-910 (920-1010/815-895); capitulum 179-189 (214); chelicera 269 (294-312); genital field 180-190/185-205 (195-215/280-330); palp: trochanter 30-35 (35), femur 120-125 (135-145), genu 90-95 (100-105), tibia 145-155 (170-180), tarsus 40-45 (45-55); leg I: trochanter 75-90 (80-85), basifemur 95-145 (100-115), telofemur 145-160 (140-165), genu 220-235 (205-260), tibia 220-240 (220-255), tarsus 140-180 (175-185); leg IV: trochanter 130-150 (135-160), basifemur 140-180 (155-165), telofemur 180-205 (200-230), genu 275-290 (295-305), tibia 295-315 (305-335), tarsus 225-235 (230-245).

Etymology. The specific epithet refers to the unusual number of acetabula (Greek *aethes* unusual, strange).

Remarks. *Aspidiobates aethes* most closely resembles *A. scutatus* Lundblad and *A. similis* Cook in

the shape and lack of sexual dimorphism of the dorsal shield, but differs from them by the possession of four pairs of acetabula.

Aspidiobates scutatus Lundblad

Aspidiobates scutatus Lundblad, 1941: 115.—Lundblad, 1947: 54-56, figs. 36a-e, pl. 26-27.—Cook, 1974: figs. 883, 886, 888.—Cook, 1986: 104-105, figs. 553-560.

Material examined. Victoria: Bald Hill Creek, 28 Apr 1975, NMV, 1 male, 1 female (fluid). Goanna Creek, 3 km N of Goongerah, D.R. Cook, M.S. Harvey and A.J. Boulton, 7 Apr 1985, NMV, 4 males, 11 females (slides and fluid). Lerderderg River, 4.8 km WNW of Blackwood, M.S. Harvey and R. St Clair, 8 Jan 1986, NMV, 1 male 1 female (fluid). Pinch Swamp Creek, 2 km E of Dellicknora, D.R. Cook, M.S. Harvey and A.J. Boulton, 8 Apr 1985, NMV, 2 males, 3 females (slides and fluid). Creek on Lyrebird Plain, Mt Buffalo National Park, M.S. Harvey and P. Lillywhite, 5 Dec 1985, NMV, 11 males, 8 females (fluid). Werribee River, 11.5 km NNW of Ballan, interstitial sample, A.J. Boulton, 2 Jun 1982, NMV, 1 female (fluid).

Remarks. Lundblad (1947) and Cook (1986) have recorded this species from one site in each of Tasmania, Victoria and New South Wales.

Aspidiobates similis Cook

Aspidiobates similis Cook, 1986: 105-106, figs. 545-552.

Material examined. Victoria: Lerderderg River, 3.8 km WNW of Blackwood, A.J. Boulton, 22 Aug 1982, NMV, 2 females (fluid). Same data except 7 Jun 1983, NMV, 2 females (fluid). Lerderderg River, 4.8 km WNW of Blackwood, R. St Clair, 2 May 1985, NMV, 1 female (slide). Same data except 5 Jun 1985, NMV, 1 male, 2 females (fluid). Same data except 5 Jul 1985, NMV, 1 male (fluid). Same data except M.S. Harvey and R. St Clair, 8 Jan 1986, NMV, 37 males, 62 females, 8 deutonymphs (slides and fluid).

Remarks. Initially described from Tasmania by Cook (1986), this is the first record of *A. similis* from mainland Australia where it has been taken only in the Lerderderg River.

Aspidiobates geometricus Cook

Aspidiobates geometricus Cook, 1986: 106-107, figs. 561-569.

Material examined. Victoria: Sandy Waterhole Creek, Genoa, 37°23'S, 149°26'E, 24 Feb 1976, NMV, 1 male (slide).

Remarks. This is the first record of this species from Victoria, which was originally described from New South Wales and Queensland.

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